

## AMENDMENTS

### In the Specification

#### Amended to Page 67 First Paragraph

The resulting mutant *Taq* polymerases are then reacted with a desired atomic or molecular tag to tag the cysteine in the mutant structure through the SH group of the cysteine residue and screened for native and/or tagged dNTP incorporation and incorporation efficiency. The mutant polymerases are also screened for fluorescent activity during base incorporation. Thus, the present invention also relates to mutant *Taq* polymerase having a cysteine residue added one or more of the sites selected from the group consisting of 513-518, 643, 647, 649 and 653-661. After cysteine replacement and verification of polymerase activity using the modified dNTPs, the mutant *Taq* polymerases are reacted with a tag through the SH group of the inserted cysteine residue. The resulting amino acid replacement for the positions 513-518, 643, 647, 649, and 653-661:

Cys Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 39)  
659 660 661

Ala Ser Trp Met Cys Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 40)  
659 660 661

Ala Ser Trp Met Phe Gly Cys Pro Arg Glu Ala Val Asp Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 41)  
659 660 661

Ala Ser Trp Met Phe Gly Val Pro Arg Cys Ala Val Asp Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 42)  
659 660 661

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Cys Val Asp Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 43)  
659 660 661

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Cys Asp Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 44)  
659 660 661

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Cys Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 45)  
659 660 661

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Cys Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 46)  
659 660 661

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Cys Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 47)

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Cys  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Ala (SEQ ID NO. 48)  
659 660 661

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Cys Arg Ala (SEQ ID NO. 49)  
659 660 661

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Cys Ala (SEQ ID NO. 50)  
659 660 661

Ala Ser Trp Met Phe Gly Val Pro Arg Glu Ala Val Asp Pro Leu Met  
643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658  
Arg Arg Cys (SEQ ID NO. 51)  
659 660 661

Cys Thr Ser Ala Ala Val (SEQ ID NO. 52)  
513 514 515 516 517 518

Ser Cys Ser Ala Ala Val (SEQ ID NO. 53)  
513 514 515 516 517 518

Ser Thr Cys Ala Ala Val (SEQ ID NO. 54)  
513 514 515 516 517 518

Ser Thr Ser Cys Ala Val (SEQ ID NO. 55)  
513 514 515 516 517 518

Ser Thr Ser Ala Cys Val (SEQ ID NO. 56)  
513 514 515 516 517 518

Ser Thr Ser Ala Ala Cys (SEQ ID NO. 57)  
513 514 515 516 517 518